

Protecting public health with open recreational water quality data: Challenges and solutions

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National Water Quality Monitoring Council, 2019*



**SWIM
GUIDE**





SWIM DRINK FISH

Connecting people with water



**LAKE ONTARIO
WATERKEEPER®**



**SWIM
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**WATERMARK
PROJECT**



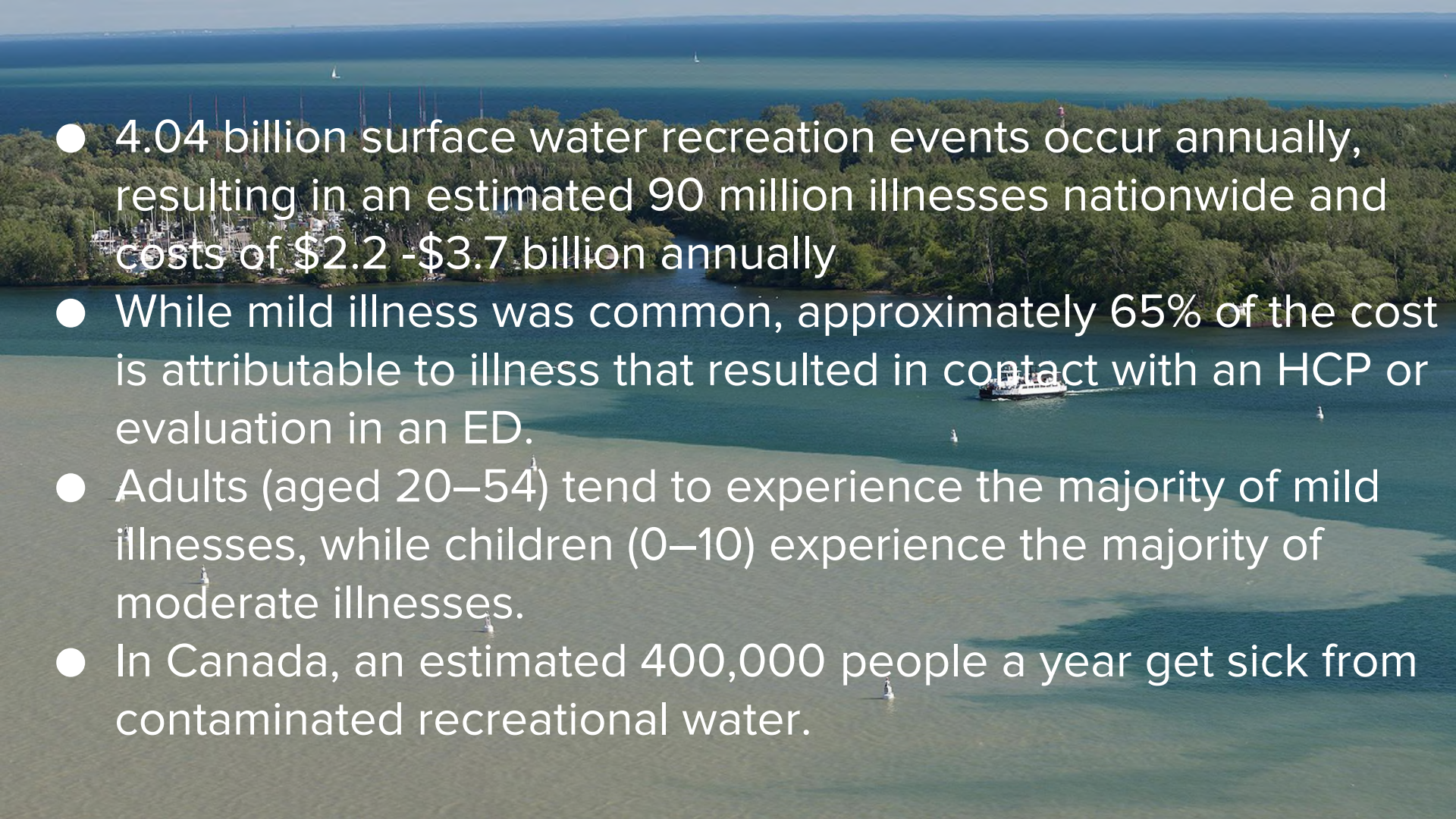
**GREAT LAKES
CHALLENGE**



**Great
Lakes
Guide**

**“for the purpose of protecting human health in
coastal recreation waters.” US EPA**
**“protection of public health and safety.” Health
Canada”**



- 
- 4.04 billion surface water recreation events occur annually, resulting in an estimated 90 million illnesses nationwide and costs of \$2.2 - \$3.7 billion annually
 - While mild illness was common, approximately 65% of the cost is attributable to illness that resulted in contact with an HCP or evaluation in an ED.
 - Adults (aged 20–54) tend to experience the majority of mild illnesses, while children (0–10) experience the majority of moderate illnesses.
 - In Canada, an estimated 400,000 people a year get sick from contaminated recreational water.

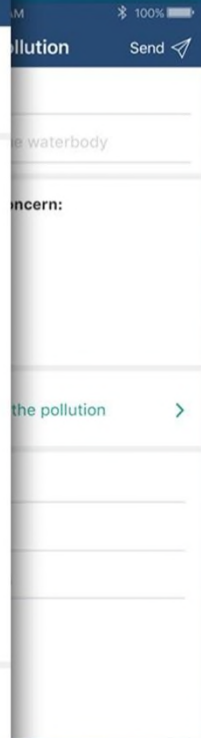
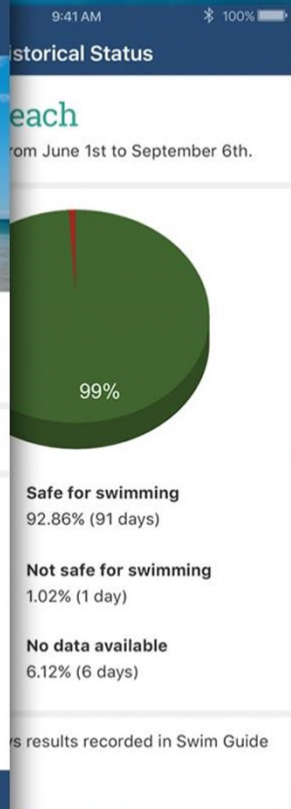
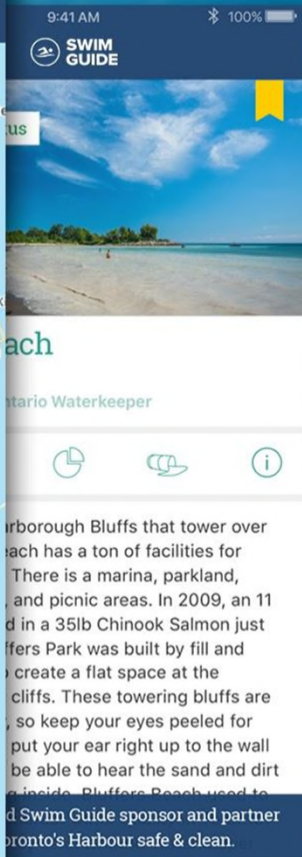
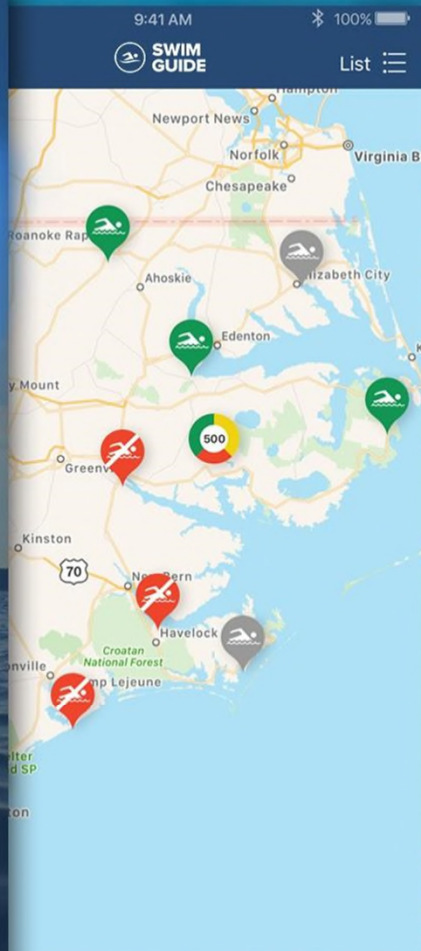


SWIM GUIDE

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Made by Swim Drink Fish Canada
/ Lake Ontario Waterkeeper



Swim Guide Users

2011-2018

3,000,000

2,250,000

1,500,000

750,000

0

2011

2012

2013

2014

2015

2016

2017

2018



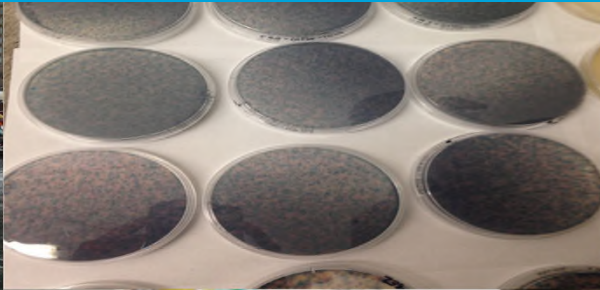
A photograph of two men in a dimly lit room, likely a workshop or office. The man on the left, wearing glasses and a red t-shirt, is smiling and holding a smartphone, showing something on the screen. He is sitting at a wooden desk with a laptop open in front of him. The laptop screen displays a software interface with various panels and data. The man on the right, wearing a dark jacket, is also smiling and looking towards the camera. He is holding a glass of water. In the background, there is a keyboard on a stand and a lamp. The overall atmosphere is casual and collaborative.

Swim Guide Affiliates: contribute data to the platform

Supporters:
contribute cash or promotional support.



Community and Government Water Quality Monitoring Programs Data



**Better, faster answers to the question
“Where Can I Swim?”
with interoperable data**



Open Data in US and Canada

The [Open Definition](#) gives full details on the requirements for ‘open’ data and content. Open data are the building blocks of open knowledge. Open knowledge is what open data becomes when it’s useful, usable and used.

The key features of openness are:

- **Availability and access:** the data must be available as a whole and at no more than a reasonable reproduction cost, preferably by downloading over the internet. The data must also be available in a convenient and modifiable form.
- **Reuse and redistribution:** the data must be provided under terms that permit reuse and redistribution including the intermixing with other datasets. The data must be machine-readable.
- **Universal participation:** everyone must be able to use, reuse and redistribute — there should be no discrimination against fields of endeavour or against persons or groups. For example, ‘non-commercial’ restrictions that would prevent ‘commercial’ use, or restrictions of use for certain purposes (e.g. only in education), are not allowed.

-- Open Knowledge International

OPEN DATA

- Raw
- Machine readable/structured data (CSV, XML, JSON)
- Discoverable (open data portal)
- Re-usable, legally and technically

NOT OPEN DATA

- Processed/refined data
- Human readable/unstructured data (Word docs, PDFs, scans, pictures)
- Not findable/hidden
- Finite/restricted use



Human readable, unstructured data

SwimSafe



A - Marie Curtis Park East Beach

The Foot of 42nd St., South of Lakeshore Rd. W.





Sampled on:	September 3, 2018
Posted on:	September 4, 2018
E. coli count:	38
Advisory:	Beach meets provincially established safety standards for swimming.

Conditions are based upon E. coli counts in beach water samples taken over the past twenty-four hours.

Reporting is closed until June 2019



Swimming conditions history: 2018

Sample Date	E. coli Level	Swimming Condition
September 3, 2018	38	 Beach meets provincially established safety standards for swimming.
September 2, 2018	--	 Improving weather conditions and the local forecast indicate a decreasing trend in E. coli levels.
September 1, 2018	--	 Improving weather conditions and the local forecast indicate a decreasing trend in E. coli levels.
August 31, 2018	61	 Beach meets provincially established safety standards for swimming.

Open, structured data

This XML file does not appear to have any style information associated with it. The document tree is shown below.

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Automated Data for Recreational Water Quality Why a standard?



FAIR Data Principles

Open Data Standards are meant to render data:

- Findable
- Accessible
- Interoperable
- Reusable



Standardizing open data

Open Data Standard for Recreational Water Quality : Development Timeline

Oct 2017 : Expert workshop to lay the groundwork for the open data standard

Nov 2017 - Feb 2018: Draft consultation period

March 2018: Pilot projects begins

June 2018: Launch of Open Data Standard

Sept 2018: Adoption of standard begins



Challenges to open data:

Lack of good data management tools.

In-house capacity and technological limitations

Adapting current data management system to new model

Funding: lack of or funding restrictions



Open data standard for the automated exchange of recreational water quality data

JSON.Example Version 1
Github: swimdrinkfish/opendata

<https://github.com/swimdrinkfish/opendata/tree/master/v1.0>

gabrielle@swimdrinkfish.ca
www.theswimguide.org
www.recreationalwater.ca

```
simplepanda Made advisory state clearer (fixed spelling, added for example in fin... 5d4295d on Apr 5
1 contributor

58 Lines (58 sloc) | 1.68 KB
Raw Blame History

1 {
2   "schema": "https://raw.githubusercontent.com/swimdrinkfish/opendata/master/v1.0/schema.json#",
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4   "records": [
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